

HD9690, HD9690-444

HDTV Graticule Generator



The HD9690 & HD9690-444 Graticule Generators are multi format High Definition video graticule generators that key various alignment markers and mattes over a source video picture in a wide variety of applications. The HD9690-444 can be operated in a dual link mode for emerging 4:4:4 high definition applications, or a 4:2:2 mode for traditional high definition (1125 and 750 line) digital video. The HD9690 can only be operated in a 4:2:2 mode.

Commonly used configurations, stored as factory presets simplify routine operation to just a few pushbuttons. The ability to customize these factory presets to your application and store them as USER PRESETS, gives the Graticule Generator tremendous flexibility while maintaining simple operation for day to day use.

Both units are a 1RU chassis with integrated control panel. The HD9690 & HD9690-444 are also available in a remote control version, which has a blank front panel and either a rack mountable, or a desktop remote control panel.

►Features & Benefits

- Automatically senses between 1080i/60, 1080i/50, 1080p/30, 1080p/25, 1080p/24, 1080p/24sF, 720p/60 and 720p/50 video formats and the 1/1.001 divisor versions where applicable
- Support for 2048x1080p/24 and 2048x1080p/24sF digital cinema formats
- HD9690 keys Graticule markers directly into 4:2:2 SMPTE 292M High Definition Serial digital video
- DVI-I Output for display on flat screen or computer monitors
- Two rectangular boxes that can be independently resized, reshaped and moved anywhere on raster, solid or dashed line
- A grid consisting of horizontal and vertical line pairs that can be positioned independently or in pairs anywhere on the raster
- Programmable horizontal and vertical matte - adjustable opacity
- Two user-programmable cross markers, positionable anywhere on the raster (one on DCP version)
- Ellipse creation for aspect ratio verification
- Automatic creation of aspect ratios for mask, box and ellipse objects
- On-screen display shows object size, position and aspect ratio
- Automatic centering of all objects or individual object by object control of centering
- Single button keyer on/off control
- Adjustable object brightness and color

- Front panel lock-out control
- Easy to operate front panel menu system gives access to advanced object control features for the most demanding application, while limiting normal day to day use to just a few preset buttons
- Factory Presets allow quick setup to common object placements on the raster
- Factory Presets for SMPTE 2046-1 or RP218 Safe AreaS
- Ten user-definable presets with user definable labels and individual write protect allow unlimited customization for any requirement
- Optional Rack mount or Desktop remote control panels

Additional Features for the HD9690-444

- Keys Graticule markers directly into SMPTE 372M and SMPTE 292M High Definition Serial digital video
- Can be operated in 4:4:4 RGB or YCbCr dual link mode with 4:2:2 output or 4:2:2 single link mode - manual select or autodetect
- Handles extended range (full scale) 4:4:4 RGB with conversion to full scale or legal ITU-R BT.709 YCbCr on the 4:2:2 single link output
- Optional 3D video mode keys graticule into two separate 292M 4:2:2 video signals

►Specifications

Serial Digital Video Input:

Standard:	HD9690 SMPTE 292M 1.5Gb/s HD9690-444 SMPTE 372M Dual link 1.5Gb/s or SMPTE 292M 1.5Gb/s
Number of Inputs:	HD9690 1 HD9690-444 1 dual link or 1 single link 2 single links (+3D option)
Connector:	BNC per IEC 61169-8 Annex A
Equalization:	Automatic up to 50m with Belden 1694A or equivalent cable
Return Loss:	> 15dB up to 1.0Gb/s, > 10dB up to 1.5Gb/s

Serial Video Output:

Standard:	Same as input
Number of Outputs:	HD9690 3 HD9690-444 1 dual link or 1 single link pgm, 2 single link pgm (+3D option) 1 single link monitor
Connector:	BNC per IEC 61169-8 Annex A
Signal Level:	800mV nominal
DC Offset:	0V ±0.5V
Rise and Fall Time:	200ps nominal
Overshoot:	< 10% of amplitude
Wideband Jitter:	< 0.2 UI
Output Return Loss:	> 10dB up to 1.5Gb/s
Payload ID:	SMPTE 352M

DVI Video Output:

Standards:	VESA (DVI-I, for DVI-D and RGBHV outputs)
Type:	DVI-I female connector
Resolution:	1920x1080 or 1280x720 - same as video input
Signal Level:	1V nominal

GPI Control Port:

Number of Inputs:	8 opto-isolated, active high or active low, programmable functions
Connector:	Female DB-9

Upgrade Control Port:

Standard:	RS-232
Connector:	Female DB-9
Baud Rate:	115200
Format:	8 bits, no parity, and 2 stop bits

Ethernet:

Network Type:	Fast Ethernet 100 Base-TX IEEE 802.3u standard for 100Mb/s base band CSMA/CD local area network Ethernet 10 Base-T IEEE 802.3 standard for 10Mb/s baseband CSMA/CD local area network
Connector:	RJ-45
Function:	FTP firmware upgrade, save or recall presets via FTP

Remote Control Port (+RCP and +DCP options only):

Standard:	RS-422, 9600 baud rate
Connector:	Female DB-9
Protocol:	Remote Control Panel

Physical:

Main Unit:	19" W x 1.75" H x 18.75" D (483mm W x 45mm H x 477mm D)
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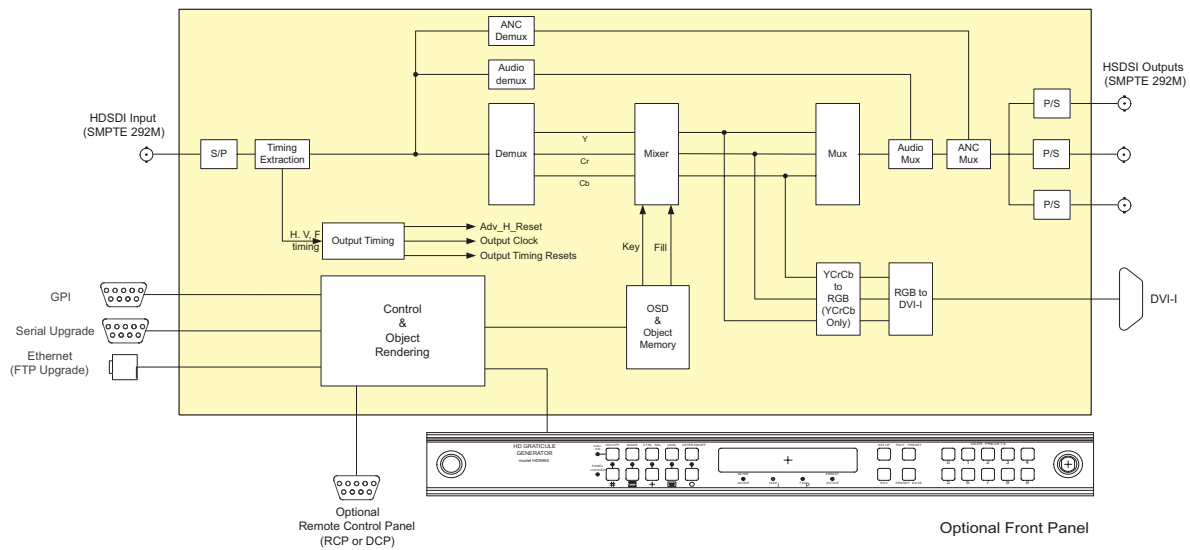
Rack Mount Control Panel:	19" W x 1.75" H x 4.25" D (483mm W x 45mm H x 110mm D)
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Desktop Control Panel:	7.75" W x 2.0" H x 6.5" D. (197mm W x 50mm H x 160mm D) 8lbs (3.5kg)
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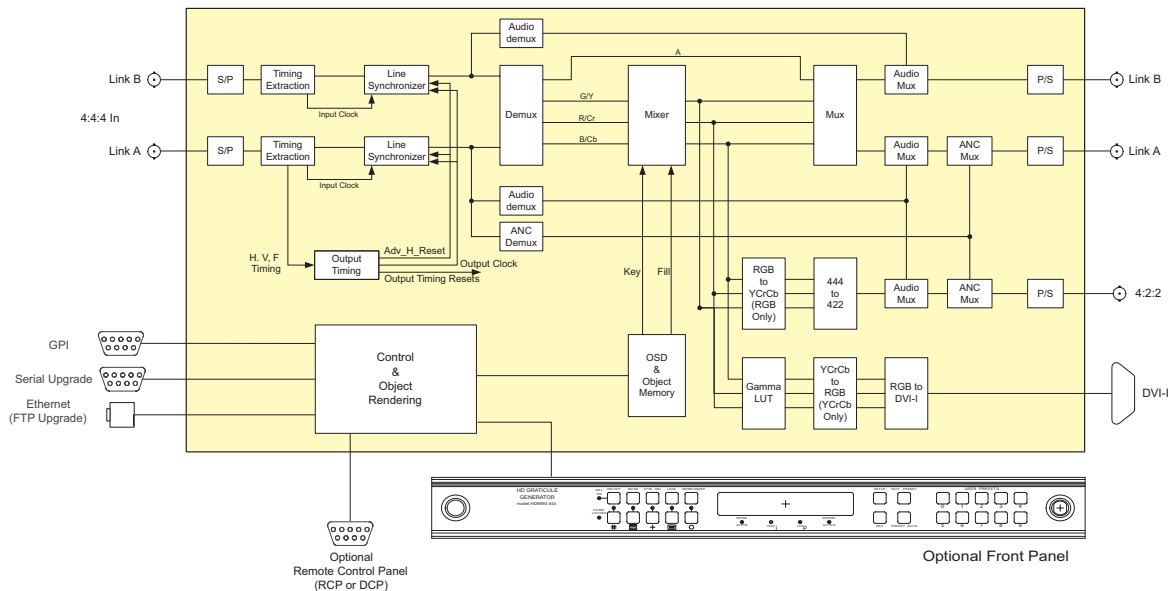
Electrical:

Main Unit:	Auto ranging 100-240V AC, 50/60Hz 40W
Desktop + Rack Mount Control Panel:	12V DC, Auto ranging 100-240V AC, 50/60Hz adapter provided, 10W
Safety:	TüV Listed, complies with EU safety Directives
EMI/RFI:	Complies with FCC Part 15 Class A regulations EU EMC directive

►HD9690 Block Diagram



►HD9690-444 Block Diagram



►Ordering Information

HD9690	HD Graticule Generator
HD9690-444	4:4:4 Graticule Generator

Ordering Options

- +RCP** Rackmount remote control
- +DCP** Desktop remote control unit
- +3D** 3D video option (for HD9690-444 only)